

**REMARKS**

Reconsideration and allowance of the above-referenced application are respectfully requested. No new matter has been added.

Applicant again acknowledges the provisional obviousness type double patenting rejection relative to Application No. 10/677,092. However, since the cited application has still not been issued as a patent, this rejection remains provisional and does not prevent this application from being issued. Applicant's representative will address the rejection in the application that remains when at least one of the applications has been issued.

The Examiner maintained his rejection of claim 7 under 35 U.S.C. §112, first paragraph, on the ground that "the specification, while being enabling for the disclosed "second laser enhancing additives", does not reasonably provide enablement for all of the encompassed laser enhancing additives. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims." (Final Action, pages 3-4)

While applicant believes that the specification does in fact enable a person skilled in the art to practice or use the invention commensurate in scope with currently pending claim 7, to expedite prosecution of the above-identified application, applicant amended claim 7 to recite that the second laser enhancing additive is selected from selected from the group consisting of zinc sulfide (ZnS), barium sulfide (BaS), alkyl sulfonate, and thioester. Support for this amendment is provided throughout the application, including for example, at paragraphs 39, 51, etc., of the published application (PG US Publication No. 2005/0003297). This amendment, therefore, obviates the examiner's contention that "[t]he scope of the claims read on all potential "second laser enhancing additive[s]" including those not disclosed by the enabling specification. Therefore the claims encompass all possible "second laser enhancing additive[s]". The instantly claimed "second laser enhancing additive[s]" reads on an infinite number of compounds." (See, Final Action, page 4).

The Examiner also maintained his rejections of claims 4-6, and 10 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite on the grounds that "[i]t is unclear if the weight percentages of claims 4-6 and 10 are based on all of the recited components in the compositions, all of the components in the composition, including those encompassed by "comprising", or

some portion of the compositions such as the first and second laser enhancing additives only.”  
(Final Action, page 7)

While applicant does not consider any of claims 4-6 and 10 to be indefinite, to expedite prosecution of the above-identified application, applicant amended claims 4-6 and 10 to clarify that the recited weights refer to the percentage weight based on the total weight of the composition. Support for this clarification is provided throughout the published application, including, for example, at paragraphs 33, 37, 133, etc., of PG US Publication No. 2005/0003297.

The Examiner also maintained his rejections of claims 1-15 and 26 under 35 U.S.C. Section 103(a) as being unpatentable over the combination of U.S. Patent No. 5,840,142 to Stevenson et al. (Stevenson), U.S. Patent No. 5,374,675 to Plachetta et al. (Plachetta) and U.S. Patent No. 5,075,195 to Babler et al. (Babler).

Applicant amended independent claim 1 to clarify that the laser enhancing additive is an additive to enhance the laser engraving responsiveness of the material to which the additive is added (e.g., to make it easier to engrave the material to which the additive is added). Applicant similarly amended independent claim 26.

Applicant's independent claim 1 thus recites “[a] composition to improve the laser engraving properties of a polymer material, the composition comprising: a first laser enhancing additive to enhance laser engraving responsiveness of the polymer material, the first laser enhancing additive comprising a first quantity of at least one of copper potassium iodide ( $\text{CuKI}_3$ ) and Copper Iodide ( $\text{CuI}$ ), and a second quantity of at least one substance comprising a metal sulfide; and a host material into which the first laser enhancing additive is mixed, the host material comprising the polymer material.” Accordingly, the first laser enhancing additive, which includes a first quantity of at least one of copper potassium iodide ( $\text{CuKI}_3$ ) and Copper Iodide ( $\text{CuI}$ ) and a second quantity of at least one substance comprising a metal sulfide, is mixed with a polymer material to thus enhance the responsiveness of the polymer material to laser engraving. As explained in applicant's published application:

**[0077] In a first aspect, one embodiment of the invention involves sensitizing at least one of the layers in a multi-layered structure, such as at least one laminate layer, to help to overcome the problem of the laminate material not being responsive to laser engraving and/or not being responsive enough to be capable of having grayscale images laser engraved thereon. We have found that the quality of laser engraving can be improved, while reducing engraving time, through over-laminate**

sensitization using one or more of the inventive formulations described herein. In one implementation of this embodiment, a layer of laminate is modified by adding an effective amount of one or more laser sensitive additives to the laminate material. We also have found that the laser sensitive additives described herein can be divided over two or more layers to provide improved laser engraving performance. Moreover (as described later herein in the second and third aspects of the invention), we have found that the laser sensitive additives also will improve laser engraving if they are present in a coating applied to a material to be engraved. (PG Publication No. 2005/0095408, page 7, paragraph 77)

The Examiner admitted that Stevenson and Babler “do not contain the instantly claimed copper potassium iodide nor copper iodide” (see, Final Action, pages 8 and 9). It follows that neither Stevenson nor Babler discloses or suggests at least the features of “[a] composition to improve the laser engraving properties of a polymer material, the composition comprising: a first laser enhancing additive to enhance laser engraving responsiveness of the polymer material, the first laser enhancing additive comprising a first quantity of at least one of copper potassium iodide ( $\text{CuKI}_3$ ) and Copper Iodide ( $\text{CuI}$ ), and a second quantity of at least one substance comprising a metal sulfide,” as required by applicant’s independent claim 1.

The Examiner contended that:

Plachetta discloses laser inscribable compositions of the instantly claimed polymers, copper iodides (column 3, lines 60-61), and pigments (column 3, lines 32-54), which fall within the scope of the instantly claimed compound of claim 7 of the instant application due to the affect of said pigments on light by definition of pigment, but no metal sulfides. The compounds of column 3, lines 32-56 are all expected to fall within the scope of the instant claim 7 also since some enhanced property is expected from each additive or it would not have been used. (Final Action, pages 8-9)

Plachetta describes thermoplastic molding material including various components (Plachetta, col. 1, lines 8-17). Plachetta explains that its thermoplastic molding material may contain fibrous or particulate fillers or a mixture thereof (Plachetta, col. 3, lines 48-51). Plachetta further explains that those fillers include “conventional additives and processing assistants, such as stabilizers, antioxidants, heat stabilizers, colorants, such as dyes and pigments, fibrous and pulverulent fillers and reinforcing agents, nucleating agents, plasticizers” (Plachetta, col. 3, lines 51-56). With respect to the antioxidants and heat stabilizers, Plachetta identifies copper halides (including iodides) as suitable materials:

**Examples of antioxidants and heat stabilizers are halides of metals of group I of the Periodic Table, for example sodium halides, potassium halides and/or lithium halides, if necessary in conjunction with copper(I) halides, for example chlorides, bromides or iodides, sterically hindered phenols, hydroquinones, aromatic secondary amines, such as diphenylamines, various substituted members of these groups and mixtures thereof, in concentrations of up to 1% by weight, based on the weight of the thermoplastic molding material. (Plachetta, col. 3, lines 57-66)**

But no where does Plachetta describe that copper halides, including copper iodides, are included to constitute a laser enhancing additive to enhance laser engraving responsiveness of the polymer material. Plachetta certainly does not describe that copper iodides, or any material, are included with at least one substance comprising a metal sulfide. Accordingly, Plachetta too fails to disclose or suggest at least the features “[a] composition to improve the laser engraving properties of a polymer material, the composition comprising: a first laser enhancing additive to enhance laser engraving responsiveness of the polymer material, the first laser enhancing additive comprising a first quantity of at least one of copper potassium iodide ( $\text{CuKI}_3$ ) and Copper Iodide ( $\text{CuI}$ ), and a second quantity of at least one substance comprising a metal sulfide,” as required by applicant’s independent claim 1.

Because none of the cited references discloses or suggests, alone or in combination at least “[a] composition to improve the laser engraving properties of a polymer material, the composition comprising: a first laser enhancing additive to enhance laser engraving responsiveness of the polymer material, the first laser enhancing additive comprising a first quantity of at least one of copper potassium iodide ( $\text{CuKI}_3$ ) and Copper Iodide ( $\text{CuI}$ ), and a second quantity of at least one substance comprising a metal sulfide,” applicant’s independent claim 1 and the claims depending from it, are patentable over the cited art.

Furthermore, applicant contends that in any event a person skilled in the art would have no reason to combine the teaching of Plachetta with either of Stevenson or Babler.

Stevenson is directed to a method for the permanent application of indicia to surface of polyolefin objects by applying pigmented material to the surface in an indicia pattern (Abstract). Stevenson describes colorants, including barium sulfide, that may be used as pigments (Stevenson, col. 2, line 66, to col. 3, line 20). Stevenson, however, does not at all discuss laser engraving, nor does it discuss laser enhancing additives to enhance the laser engraving

responsiveness of a material, and certainly does not discuss laser enhancing additives that include any of copper potassium iodide, Copper Iodide and a metal sulfide.

As noted above, Plachetta describes a thermoplastic molding material that includes various components. Plachetta also describes laser inscription. While Plachetta describes that copper halides, including for example, copper iodide, are used as antioxidants or heat stabilizers, Plachetta does not describe a laser enhancing additive, that includes any of copper potassium iodide, Copper Iodide and a metal sulfide, that are used to enhance laser engraving responsiveness of the material to which they are mixed.

Babler describes a method of laser marking objects (see Abstract). However, as the Examiner noted, Babler fails to disclose use of copper potassium iodide or copper iodide, and certainly makes no mention of an additive to enhance laser engraving responsiveness of a material, where the additive includes copper potassium iodide or copper iodide. Babler also does not disclose that metal sulfide is used for laser enhancing additive to improve laser engraving responsiveness (rather, molybdenum disulfide, for example, is used as a colorant).

Because none of the cited references describes laser enhancing additive to enhance laser engraving responsiveness, and certainly do not discuss laser enhancing additives that include copper potassium iodide, copper iodide and/or a metal sulfide, a person skilled in the art would have no reason to consult or combine these reference to arrive at the claimed invention. Although some of the references talk in general about laser marking, the references do not describe using an additive to improve laser engraving responsiveness.

For this reason too, therefore, applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness. Accordingly, applicant's claim 1 and the claims depending from it are patentable over the cited art.

Independent claim 26 recites "[a] composition to improve laser engraving properties of a polymer material, the composition comprising: a first quantity of a first additive to enhance laser engraving responsiveness of the polymer material, the first additive comprising at least one of copper potassium iodide ( $\text{CuKI}_3$ ) and Copper Iodide ( $\text{CuI}$ ); a first host material into which the first additive is mixed, the first host material comprising the polymer material; a second quantity of a second additive to enhance laser engraving responsiveness of the polymer material, the second additive comprising at least one substance comprising a metal sulfide; and a second host

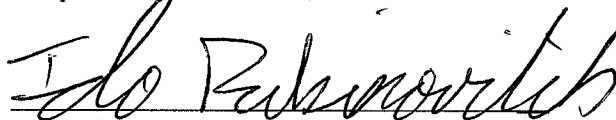
material into which the second additive is mixed, the second host material comprising the polymer material.” For reasons similar to those provided with respect to independent claim 1, claim 26 is patentable over the cited art.

Concluding Comments

It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment. Applicant asks that all claims be allowed.

If there are any questions regarding these amendments and remarks, the Examiner is encouraged to contact the undersigned at the telephone number provided below. The Commissioner is hereby authorized to charge any additional fees that may be due, or credit any overpayment of same, to Deposit Account No. 50-0311, Reference No. 38820-510C01US.

Respectfully submitted,



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